CLAIMS

What is claimed is:

1. A compressor comprising:

a compressor pump unit, said compressor pump unit driven by a motor;

a protection device associated with said motor, said protection device operable to stop operation of said motor should a first system condition reach a predetermined level; and

a control for said compressor, said control monitoring a second system condition, and identifying when said second system condition indicates said first system condition is approaching said predetermined level, said control being operable to reduce a load on said compressor as said first system condition approaches said predetermined level.

2. A compressor as set forth in claim 1, wherein said control is operable to open an unloader valve on said compressor should said first system conditions approach said predetermined level.

3. A compressor as set forth in claim 1, wherein said control is operable to close an economizer valve on said compressor should said first system conditions approach said predetermined level.

4. A compressor as set forth in claim 1, wherein said motor is a variable speed motor, and said control being operable to slow a compressor motor speed should said first system condition approach said predetermined level.

5. A compressor as set forth in claim 1, wherein said second system conditions are at least one of the motor temperature, oil sump temperature, motor current, motor power, discharge temperature, suction pressure, discharge pressure, operating voltage, ambient temperature, economizer pressure or economizer temperature.

6. A compressor as set forth in claim 1, wherein at least one of said first and at least one of said second system conditions are the same.

7. A refrigerant cycle comprising:

a compressor having a compressor pump unit and a motor for driving said compressor pump unit, said motor being provided with a protection device operable to stop operation of said motor should a first system condition exceed a predetermined level;

a condenser downstream of said compressor;

an expansion device downstream of said condenser;

an evaporator downstream of said expansion device; and

a control for controlling at least said compressor, said control being operable to sense a second system condition and move said refrigerant cycle to a less loaded operation should said monitored second system condition indicate said first system condition may be approaching said predetermined level.

8. A refrigerant cycle as set forth in claim 7, wherein said control actuates an unloader valve for unloading said compressor pump unit and returning a compressed refrigerant back to a suction line when said monitored second system condition indicate said first system condition may be approaching said predetermined level.

9. A refrigerant cycle as set forth in claim 7, wherein said refrigerant cycle further includes an economizer cycle between said condenser and said expansion device, said economizer cycle being provided with a shut-off valve, and said control stopping operation of said economizer unit by closing said shut-off valve should said monitored second system condition indicate said first system condition may be approaching said predetermined level.

10. A refrigerant cycle as set forth in claim 7, wherein said refrigerant cycle further includes an economizer cycle between said condenser and said expansion device, said economizer cycle being provided with a shut-off valve, and said control stopping operation of said economizer unit by closing said shut-off valve should said monitored second system condition indicate said first system condition may be approaching said predetermined level, having both economizer shutoff valve and unloader bypass valve open.

11. A refrigerant cycle as set forth in claim 7, wherein said motor is a variable speed motor, and said control being operable to slow a compressor motor speed should said system conditions said monitored second system condition indicate said first system condition may be approaching said predetermined level

12. A refrigerant cycle as set forth in claim 7, wherein said second system condition is at least one of the motor temperature, oil sump temperature, motor current, motor power, discharge temperature, suction pressure, discharge pressure, operating voltage, ambient temperature, economizer pressure or economizer temperature, and said control being operable to determine said first system condition approaching said undesirable level by monitoring said at least one of said motor temperature, oil sump temperature, motor current, motor power, discharge temperature, suction pressure, discharge pressure, operating voltage, ambient temperature, economizer pressure or economizer temperature.

13. A refrigerant cycle as set forth in claim 7, wherein said first and second system conditions are the same condition.

14. A method of operating a refrigerant cycle comprising the steps of:

(1) monitoring a first system condition on a compressor, and providing a motor for said compressor with a shut-off switch, said shut-off switch being operable to stop operation of said compressor motor should said first system condition exceed a predetermined maximum;

(2) monitoring a second system condition and determining when said second system condition indicates said first system condition is approaching said predetermined maximum, and moving said refrigerant cycle to a lower capacity mode of operation.